AMENDMENTS TO THE CLAIMS

1-16. (Canceled)

17. (New) A compression refrigeration system comprising:

a closed circulation circuit comprising a compressor, a heat rejector, an expansion device, and a heat absorber, said closed circulation circuit being operable to circulate a refrigerant and pressurize the refrigerant to a high-side pressure, the high-side pressure being supercritical; and

a controller operable to estimate a parameter value reflecting energy consumption to determine an optimum high-side pressure by perturbation of the high-side pressure during operation of said compression refrigeration system;

wherein said compression refrigeration system operates at the optimum high-side pressure after the optimum high-side pressure has been determined.

- 18. (New) The compression refrigeration system of claim 17, wherein said closed circulation circuit includes the refrigerant, and said refrigerant comprises carbon dioxide.
- 19. (New) The compression refrigeration system of claim 17, wherein the parameter value reflects minimum operable energy consumption.
- 20. (New) The compression refrigeration system of claim 17, wherein said heat rejector lowers a temperature of the refrigerant, said heat rejector utilizing a heat sink; and

wherein the parameter value is a difference in temperature between the refrigerant and the heat sink.

21. (New) The compression refrigeration system of claim 17, wherein said heat rejector lowers a temperature of the refrigerant, said heat rejector utilizing a heat sink; and wherein said controller estimates the parameter value by increasing the high-side

pressure, monitoring an impact of increasing the high-side pressure on a difference in temperature between the refrigerant and the heat sink, and discontinuing increasing the high-side pressure when the impact is below a threshold level.

- 22. (New) The compression refrigeration system of claim 21, wherein the threshold level varies according to at least one operating condition.
- 23. (New) The compression refrigeration system of claim 17, wherein the parameter value is an outlet temperature of said heat rejector.
- 24. (New) The compression refrigeration system of claim 17, wherein said controller estimates the parameter value by varying the high-side pressure and determining the optimum high-side pressure corresponding to a minimum operable energy consumption of the compression refrigeration system.
- 25. (New) The compression refrigeration system of claim 17, wherein said compressor pressurizes the refrigerant to the optimum high-side pressure after the optimum high-side pressure has been determined.
- 26. (New) The compression refrigeration system of claim 17, wherein said controller controls a perturbation of the high-side pressure and establishes a correlation between the high-side pressure and the parameter value, the parameter value reflecting a minimum operable energy consumption.

27. (New) A method of operating a compression refrigeration system including a closed circulation circuit comprising a compressor, a heat rejector, an expansion device, and a heat absorber, the method comprising:

operating the compression refrigeration system by circulating a refrigerant through the closed circulation circuit and pressurizing the refrigerant to a high-side pressure, the high-side pressure being supercritical;

estimating a parameter value reflecting energy consumption to determine an optimum high-side pressure by perturbation of the high-side pressure during operation of the compression refrigeration system; and

operating the compression refrigeration system at the optimum high-side pressure after the optimum high-side pressure has been determined.

- 28. (New) The method of claim 27, wherein the refrigerant comprises carbon dioxide.
- 29. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

providing a controller which controls a perturbation of the high-side pressure and estimates the parameter value, the parameter value reflecting minimum operable energy consumption.

- 30. (New) The method of claim 27, wherein said operating of the compression refrigeration system comprises the heat rejector lowering the temperature of the refrigerant, the heat rejector utilizing a heat sink; and wherein the parameter value is a difference in temperature between the refrigerant and the heat sink.
- 31. (New) The method of claim 27, wherein said operating of the compression refrigeration system comprises the heat rejector lowering the temperature of the refrigerant, the heat rejector utilizing a heat sink; and

wherein said estimating of the parameter value comprises:

increasing the high-side pressure,

monitoring an impact of increasing the high-side pressure on a difference in temperature between the refrigerant and the heat sink,

discontinuing increasing the high-side pressure when the impact is below a threshold level.

- 32. (New) The method of claim 31, wherein the threshold level varies according to at least one operating condition.
- 33. (New) The method of claim 27, wherein the parameter value is an outlet temperature of the heat rejector.
- 34. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

varying the high-side pressure;

determining a high-side pressure corresponding to a minimum operable energy consumption of the compression refrigeration system.

- 35. (New) The method of claim 27, wherein said operating of the compression refrigeration system after the optimum high-side pressure has been determined comprises pressurizing the refrigerant to the optimum high-side pressure.
- 36. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

providing a controller which controls a perturbation of the high-side pressure and establishes a correlation between high-side pressure and the parameter value, the parameter value reflecting a minimum operable energy consumption.